Old Roosevelt Field Contaminated Groundwater Area Site
Remedial Action (RA)
Garden City, New York

Field Change Notification (FCN)

Date: December 31, 2012

Request No.: RA-04

FCN Title: Revised Southern Extraction Well Screen Intervals

Description: This FCN includes changes to the screen intervals for the three extraction wells (SEW-01S, SEW-01I and SEW-01D) from the approved October 19, 2012 Field Change Notification, Request No. 3 (RA-03).

Reason for the Deviation: The FCN RA-03 specified installation of one test boring (STB-1) and three extraction wells (SEW-1S, SEW-1I and SEW-1D), natural gamma log and soil sample collection from the test boring, and the design of well screen size and intervals based on STB-1 data. All the data collected from STB-1 were evaluated by CDM Smith; the changes to the well screen intervals and rationale are summarized in the attached memorandum (Old Roosevelt Field Southern Extraction Well Installation, Well Screen Design Recommendation, dated December 27, 2012).

Recommended/Modification:
The extraction wells (SEW-01S, SEW-01I and SEW-01D) screen intervals are summarized below:

Extraction Wells	RA-03 Proposed Screen Interval Depth (feet bgs)	Revised Screen Interval Depth (feet bgs)
SEW-01S	350 to 430	360 to 400
SEW-01I	435 to 475	414 to 434 and 457 to 467
SEW-01D	485 to 545	480 to 500 and 510 to 525

bgs – below ground surface

Impact on Data Quality Objectives: Changes to screen intervals will prevent screening in the finest formation material, which leads to low yield and blockage of the gravel pack.

RAC 2 Contract No.: EP-W-09-002

Work Assignment No.: 023-RARA-02PE

Signatures:

M. A. Rahmani

Muzaffar Rahmani, CDM Smith Task Leader

Thomas Mathew

Thomas Mathew, CDM Smith Project Manager

Enclosure

cc:
Sherrel Henry, EPA Remedial Project Manager
Jeniffer Oxford, CDM Smith QA Coordinator
Bill Sy, EPA QA Officer
Old Roosevelt Field RA Field Team

213344

Memorandum

To: *Ali Rahmani*

From: *Joe Cattafe*

Date: *December 27, 2012*

Subject: *Old Roosevelt Field Southern Extraction Well Installation*
Well Screen Design Recommendations

The final design of the wellscreens for the three new extraction wells at the Old Roosevelt Field site is as follows:

Shallow well
Screen from 360' to 400'
Gravel - US Silica Filpro #1
Screen slot size – 0.030 inch

Intermediate well
Screen from 414' to 434'
Casing blank from 434' to 457'
Screen from 457' to 467'
Gravel - US Silica Filpro #0
Screen Slot size - 0.020 inch

Deep well
Screen from 480' to 500'
Casing blank from 500' to 510'
Screen from 510' to 525'
Gravel - US Silica Filpro #1
Screen slot size – 0.030 inch

The design was based on a combination of data, including the lithologic log for test boring TB-1, the natural gamma log for test boring TB-1, the results of sieve analysis performed on formation samples from the screen zones and the initial design provided by Al Smith from Johnson Wellscreen. Copies of these items are attached.

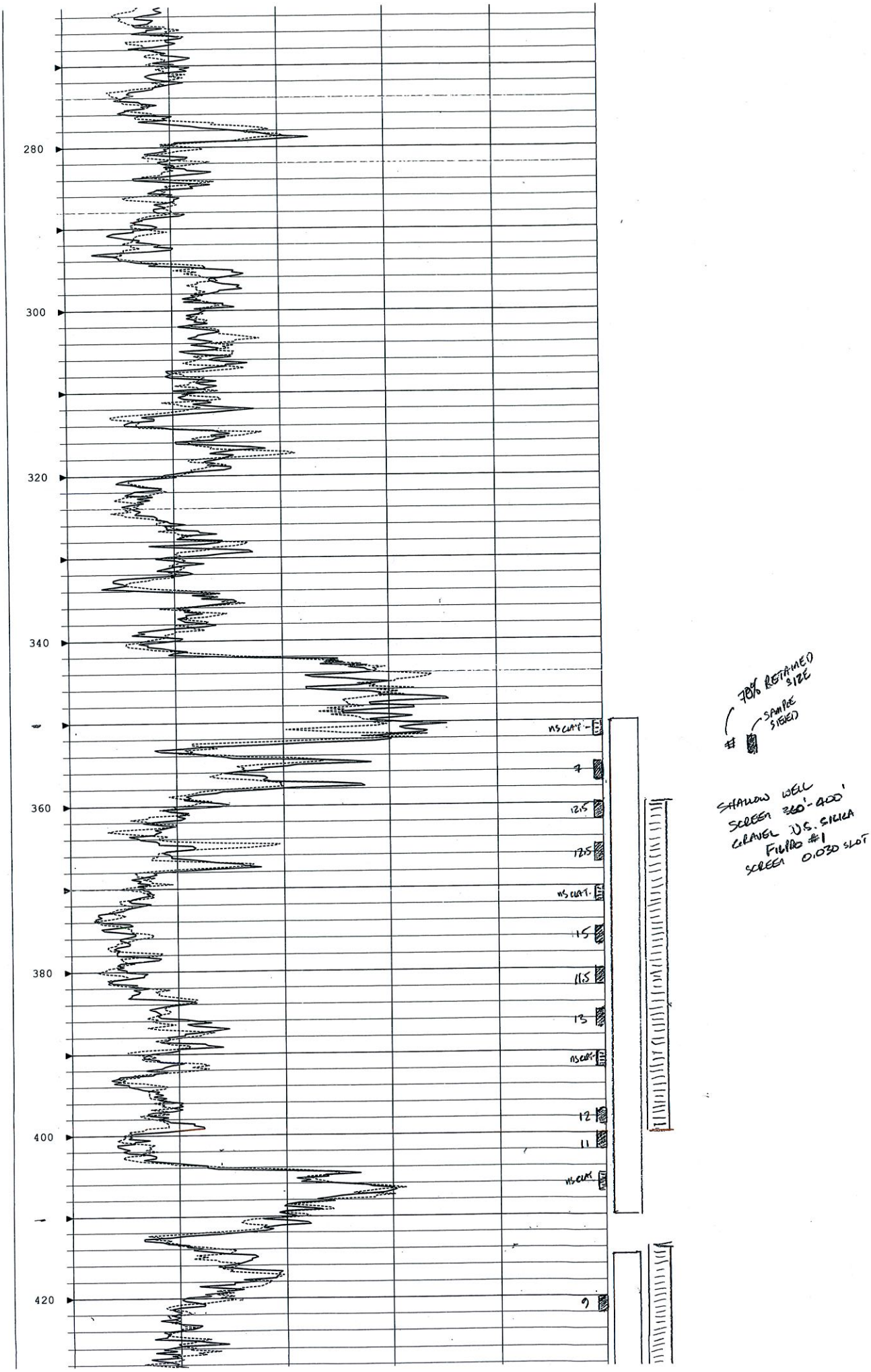
Johnson's initial design selected the appropriate gravel pack and slot size based on the pre-selected screen intervals for the three wells (350 to 430 feet, 435 to 475 feet and 485 to 545 feet). Johnson did not have the advantage of comparing the formation samples submitted for grain size analysis to the gamma log or lithologic log for TB-1. While this was a conservative design based on the finest formation material in the screen intervals, I agree that it was the appropriate gravel pack and screen design for the pre-selected depth intervals.

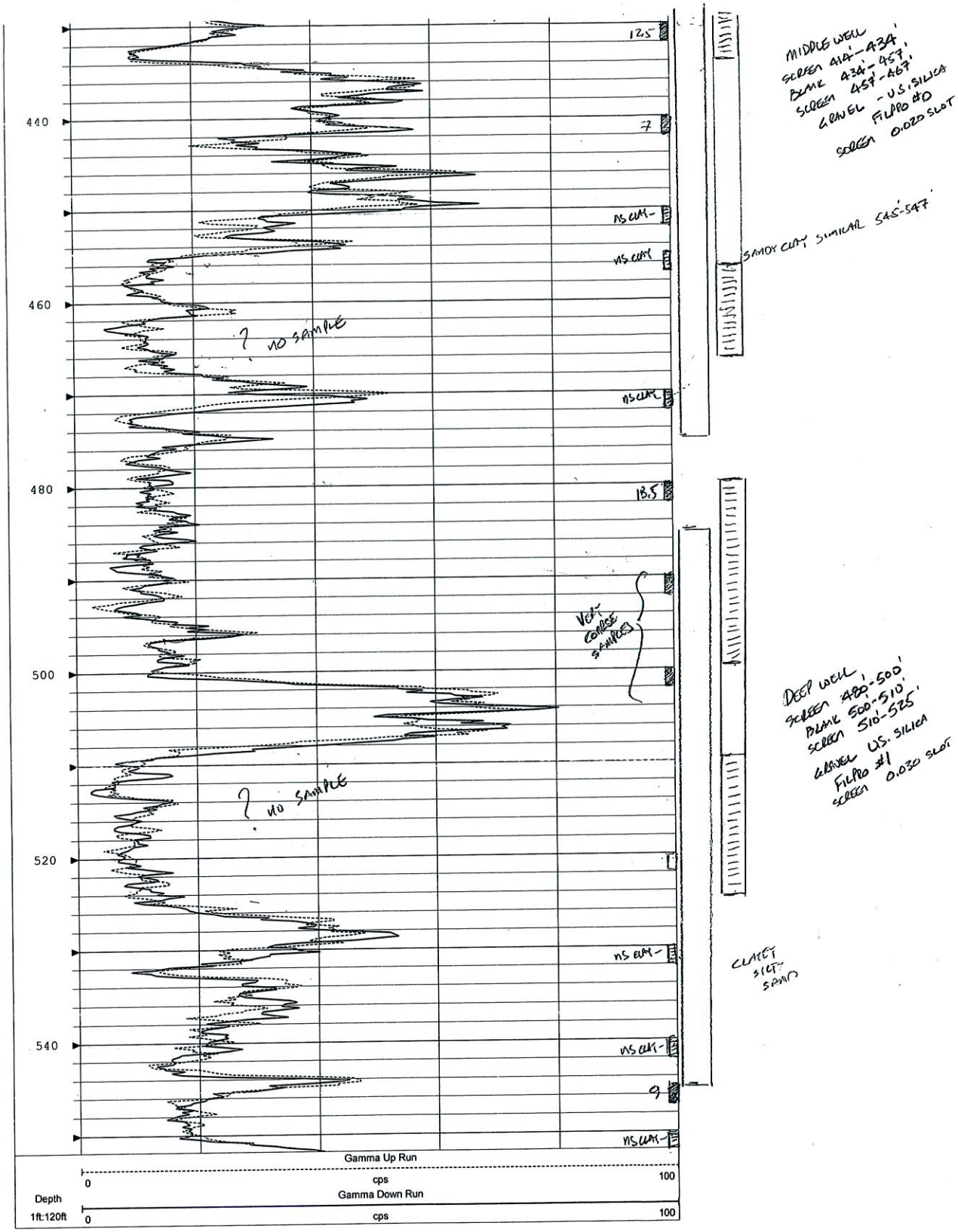
The final design modified the screen intervals and uses sections of casing to seal off intervals of finer formation material such as clay, silt and silty very fine sand. This allowed the use of a coarser grade of filter pack material (U.S. Silica Filpro #1) and a larger screen slot size for the shallow and deep wells. The sandy intervals throughout the screen zone for the intermediated depth well were generally finer, and it was necessary to retain the use of a finer filter pack material (U.S. Silica Filpro #0) and a smaller screen slot size. I provided a copy of this design to Al Smith, along with a copy of the gamma log, and he concurred that it was appropriate for the modified screen intervals.

Both designs were based on the method of selecting a filter pack material presented in Driscoll, 1986 (Groundwater and Wells). Grain size distribution analysis was performed on 17 formation samples collected within the screen interval of all three wells. A commercial grade of filter pack material was selected using the 70 % sizes from cumulative percent versus grain size graphs and multipliers between 4 and 6 for uniform formation material.

The coarser grade filter pack material will facilitate the well development process because higher velocities can be generated between the screen and borehole wall. The shorter screen interval will not adversely affect the design pumping rates for the extraction wells. Based on the published transmitting capacities of 8-inch Johnson Free-Flow wellscreen, total transmitting capacities of the screens in the final design will range from approximately 360 gallons per minute (gpm), for the intermediate depth well, and to more than 600 gpm, for the deep well. The combination of the three wells will still provide coverage of the same depth interval as the original pre-selected interval, as water would not have been withdrawn from the silt and clay intervals even if the screen extended across these intervals.

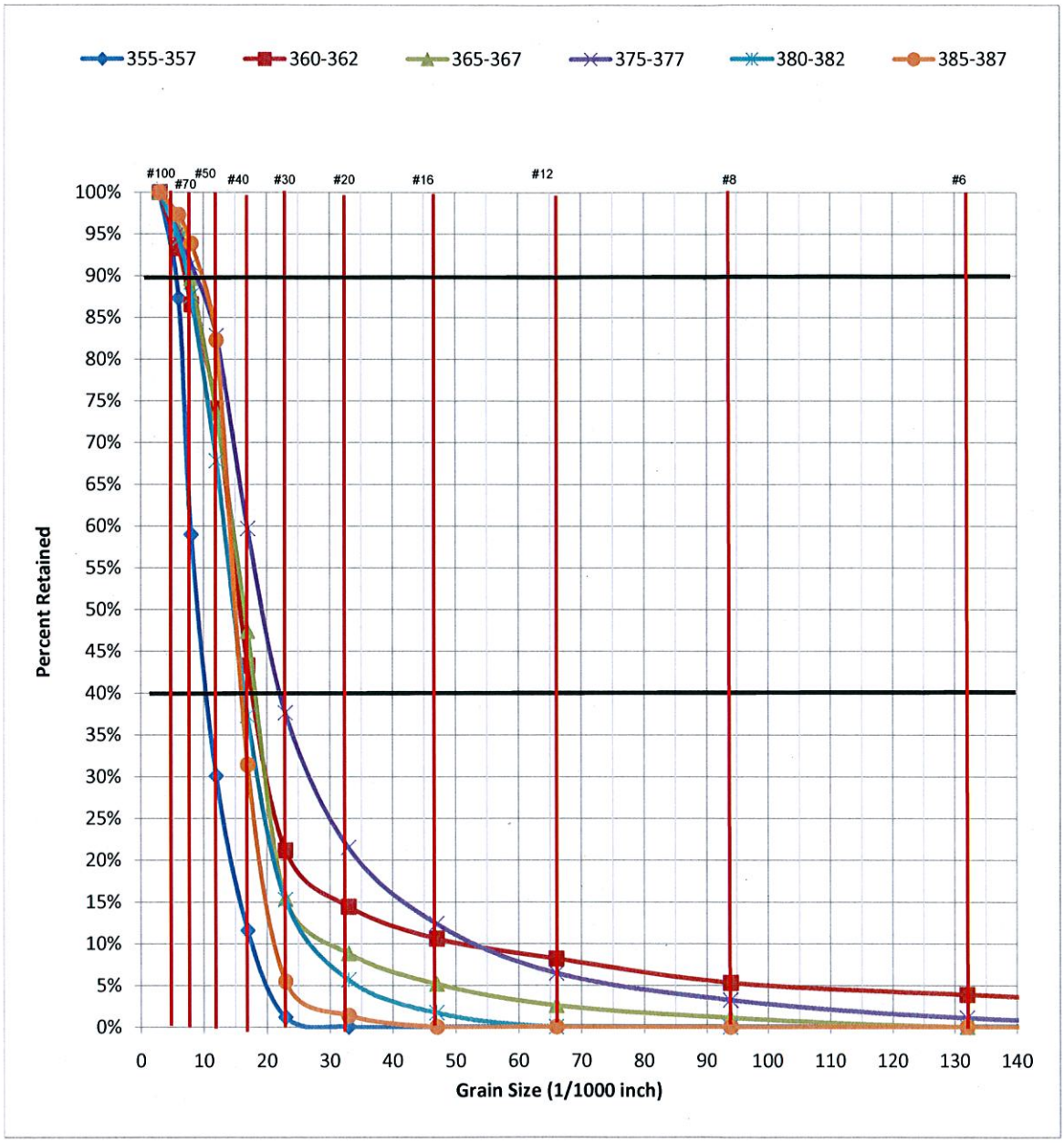
cc: Thomas Mathew
Mike Ehnot


280
300
320
340
360
380
400
420
NS CLAY
7
12.5
12.5
NS CLAY
15
11.5
13
NS CLAY
12
11
NS CLAY
9
70% RETAINED SIZE
SAMPLE SIEVED
#
SHALLOW WELL
SCREEN 360'-400'
GRAVEL U.S. SILICA
FILTRO #1
SCREEN 0.030 SLOT


12.5
7
NS CLAY
NS CLAY
NS CLAY
13.5
NS CLAY
NS CLAY
9
NS CLAY
440
460
480
500
520
540
? NO SAMPLE
? NO SAMPLE
VERY COARSE SAMPLES
MIDDLE WELL
SCREEN 414'-434'
BLANK 434'-457'
SCREEN 457'-467'
GRAVEL - U.S. SILICA
FILPRO #0
SCREEN 0.020 SLOT
SAMOA CLAY SIMILAR 545'-547'
DEEP WELL
SCREEN 480'-500'
BLANK 500'-510'
SCREEN 510'-525'
GRAVEL U.S. SILICA
FILPRO #1
SCREEN 0.030 SLOT
CLAYEY SILTY SAND
Gamma Up Run
0
cps
100
Depth
1ft:120ft
Gamma Down Run
0
cps
100

Johnson Screens
651-636-3900

SAND ANALYSIS



Job Name Old Roosevelt Extraction TB-1
Location Garden City, NY
Driller Uni-Tech Drilling

Sample ID 120312-1
Analyzed by: Al Smith, 651-638-3160
Date: 12/3/2012
No Test 350-352, 370-372, 390-392, 405-407, 450-452 (Clay)

Casing ϕ 8"
Screen ϕ 8" Pipe Size

Yield 100 GPM
SWL (ft) 80'

Recommended Slot Size 20 Slot
Recommended Gravel Pack #0 Morie

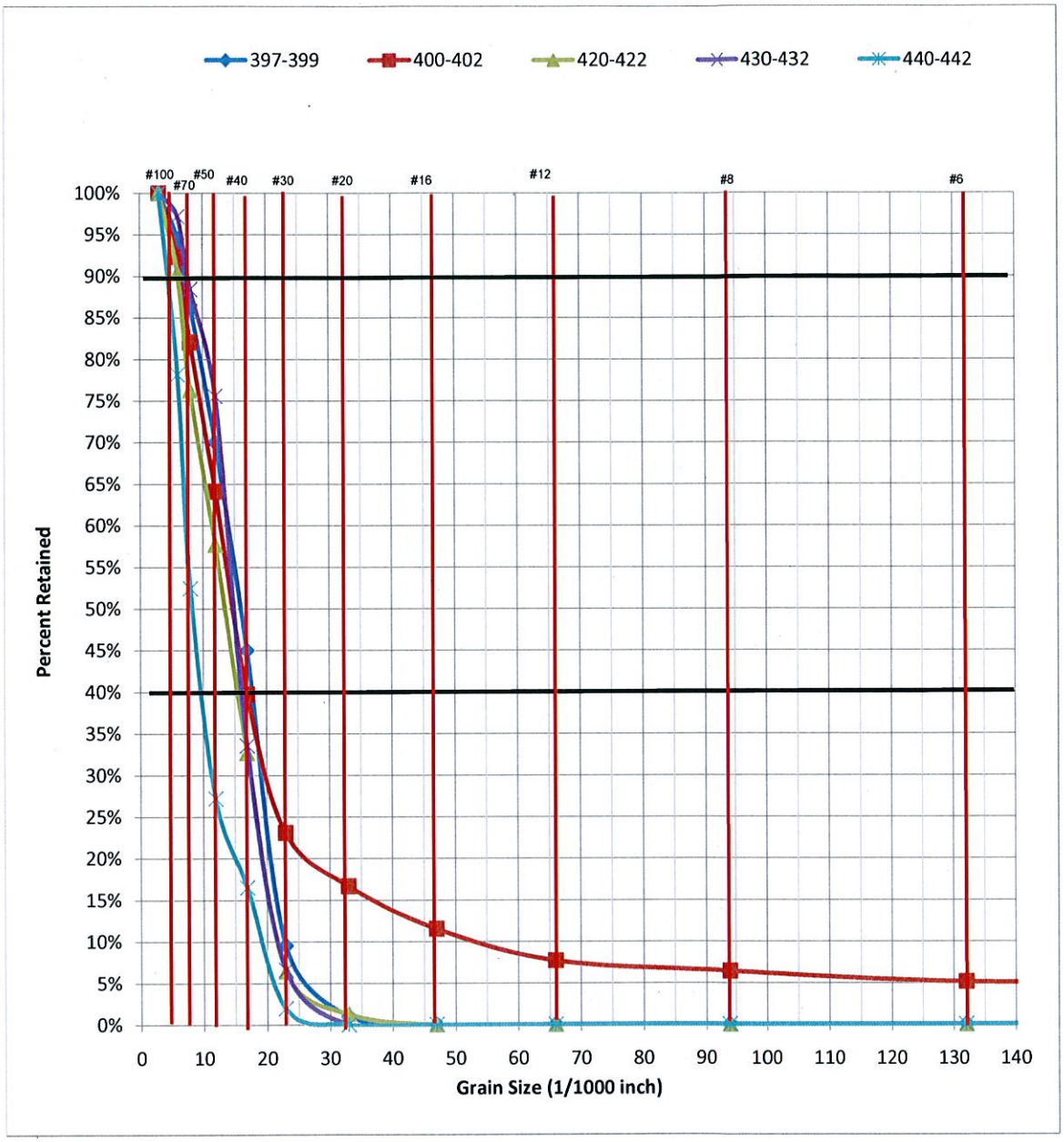
Based exclusively on the samples provided by the contractor, a sieve analysis graph and suggested screen slot size is provided as requested. Since numerous construction considerations and site circumstances influence successful well completion, Johnson Screens assumes no responsibility for final well performance nor awareness of local regulations pertaining to well installations.

Prepared by:albert j smith

Send Samples to 1950 Old Highway 8, New Brighton, MN 55112

Johnson Screens
651-636-3900

SAND ANALYSIS



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Johnson Screens
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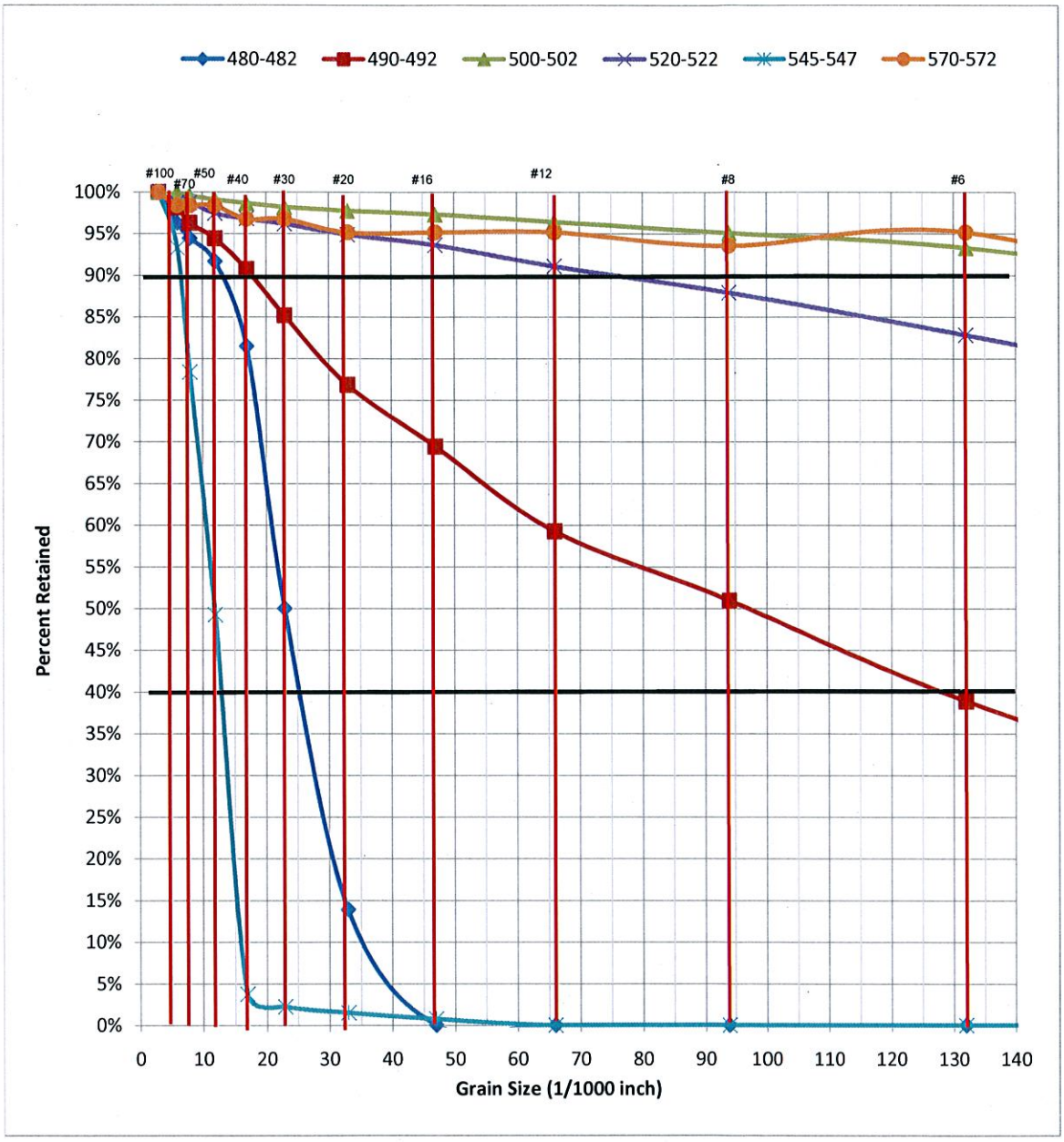

Job Name Old Roosevelt Extraction TB-1
Location Garden City, NY
Driller Uni-Tech Drilling

Sample ID 120312-1
Analyzed by: Al Smith, 651-638-3160
Date: 12/3/2012
No Test 455-457, 470-472, 530-532, 540-542, 550-552 (Clay)

Casing ϕ 8"
Screen ϕ 8" Pipe Size

Yield 100 GPM
SWL (ft) 80'

Recommended Slot Size 20 Slot
Recommended Gravel Pack #0 Morie

Based exclusively on the samples provided by the contractor, a sieve analysis graph and suggested screen slot size is provided as requested. Since numerous construction considerations and site circumstances influence successful well completion, Johnson Screens assumes no responsibility for final well performance nor awareness of local regulations pertaining to well installations.

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